New Haven Harbor
Connecticut

Supplement Report To April 1981 Feasibility Report Including The Addendum To The Final Environmental Impact Statement

US Army Corps of Engineers
New England Division

OCTOBER 1981

SUPPLEMENT REPORT
TO APRIL 1981
FEASIBILITY REPORT ON
NEW HAVEN HARBOR, CT

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INTRODUCTION

This supplement to the April 1981, New Haven Harbor, CT, Feasibility Report (FR) has been developed to address concerns that arose during the very late stages of the study. These concerns for the most part center on three major issues which have resulted in new or changed features in the selected plan.

The first change comprises a new, smaller common turning basin and an extended modification of the main ship channel, which is now offered in place of the proposed expansion of the existing turning basin. This feature slightly reduces overall dredging and disposal requirements and provides more maneuvering room for the largest vessels expected to use the port. A new project feature is an additional realignment of the ship channel to eliminate a hazardous bend recently brought to our attention by the U.S. Coast Guard. The final change in the selected plan is a proposal to use suitable dredged materials to fill a large borrow pit in New Haven Harbor at Morris Cove rather than disposing of all dredged materials at an openwater site in Long Island Sound.

Other related changes have been made as necessary.

SELECTED PLAN (MODIFIED NED-EQ ORIENTED)

This plan as shown on Plate 1 consists of the following improvements:

. Deepen the main ship channel from 35 feet to 40 feet from deep water in Long Island Sound along the line of the existing 35-foot deep channel a distance of about 36,600 feet upstream to the end of the existing Federal project.

. Widen the main ship channel from 400 feet to 500 feet over a distance of about 20,900 feet or 4.0 miles, thus creating an overall ship channel 500 feet wide from deep water in LIS to the upstream end of the existing project, a distance of about 36,600 feet or about 6 miles.

. Realign the ship channel beginning at Station 110+00 and continuing north to the upstream limit of the existing project at Station 13+00, an overall distance of about 9,700 feet.

. Widen the channel bend at Southwest Ledge from a minimum of 560 feet to a minimum of 780 feet.

. Provide a common turning basin, approximately 1,200 feet wide (irregular octagon), 40 feet deep centered at about Station 45+00.

With this plan, including related interior access channels and terminal berth areas, it would be necessary to remove and dispose of an estimated 4.4 million cubic yards of unconsolidated materials and 27,200 cubic yards of rock. This 40-foot project proposal when compared with the 41-foot project plan in the FR represents a 300,000 cy reduction in dredged materials. Bucket and dipper type dredges are proposed for dredging and all material would be transferred into dump scows and transported to two openwater sites. Disposal operations would take place in the harbor about one mile east of the ship channel at Morris Cove by filling a manmade hole with about 900,000 cy of suitable materials including 27,200 cy of rock. The remaining volume, some 3.5 mcy would be deposited at the State-approved Long Island Sound Central Disposal Site located about six nautical miles south of the entrance to New Haven Harbor.

Head of Navigation - Ship Channel, and Turning Basin

Alternative turning basin and ship channel configurations have been investigated to determine the best design at an optimum location with a view towards safely and efficiently accommodating present and future deep draft vessel needs at the head of navigation. Findings indicate:

a) Existing - The existing 5,800 foot by 800 foot turning basin is inefficient as it attempts to provide access to every berth but no longer can because today's larger vessels require more space to maneuver and turn.

b) Feasibility Report (FR) Proposal - The modification of the existing turning basin proposed in the Feasibility Report merely deepens the existing basin, which offers some relief, but would not accommodate the largest vessels expected to use it.

c) Supplemental Proposal

1) The 500 foot widening of the ship channel from deep water in Long Island Sound to the entrance to the basin area proposed in the Feasibility Report should be extended farther upstream to the limit of the existing deep draft project, thereby narrowing the existing basin area by about 300 feet over most of its length. Furthermore, a common turning basin for all large vessels would form an integral part of the ship channel. Ships entering and leaving berths that are perpendicular to the channel would require a maximum turning diameter, thus the newly proposed basin has been centered at about Station 45+00 to face those facilities used most often.

2) Ships using other nearby berths would be brought with tug assistance to the new common basin and turned. The design criteria for this common turning basin diameter is 150 percent of the length of the largest vessel expected to use it; i.e., 1.50 x 800 or 1,200 feet. For construction purposes lines varying in length from 400 to 600 feet and tangential to the 1,200-foot diameter circle were formed to outline the sides of the basin east and west of the newly proposed 500-foot wide channel which would create an irregular octagon, as shown on Plate 2 of this report.

3) As a project feature, interior access channels from the narrowed Federal channel to each of the six existing deep draft berths would be provided by local interests. These changes consisting of modification of the existing turning basin and realignment of the ship channel immediately downstream of the basin are in lieu of the existing project. If and when Congress authorizes and funds the proposed project, it is intended, during advance engineering and design stages, to deauthorize the existing 35-foot deep project. Implementing the Federal ship channel and common turning basin alternative would require the removal and disposal of 458,000 cy, 75,000 cy less than called for in the Feasibility Report's proposed plan for the same area. However, because interior deep draft channel access is now necessary, private terminal owners intending to use them would be required to deepen the access areas and their berths to depths commensurate with the proposed channel.

Channel Realignment

The U.S. Coast Guard reported that four vessel groundings have occurred at the ship channel bend located on the channel's right side (at about Station 86+00) and about 1,000 feet south of the entrance to the existing turning basin. These groundings, they report, took place between 1975 and 1979. Other vessel groundings (undocumented) in the same area have occurred since 1979. They recommend the bend be eliminated before a disaster occurs, as the last documented grounded vessel was carrying 380,000 gallons of caustic soda. Vessel users concur that the bend is a hazard to navigation. Straightening the channel from Station 72+00 to 110+00 is needed to eliminate the bend. To do so, it would be necessary to remove the dispose of 649,000 cubic yards of unconsolidated materials, 280,000 cubic yards more than if deepening were performed following the existing channel alignment through the same reach, as proposed in the Feasibility Report. This new realignment has been incorporated into the final selected plan.

Disposal of Dredged Materials

The plan recommended in the Feasibility Report calls for openwater disposal of all materials at the approved Central Long Island Sound (CLIS) Disposal Site. However, a total of 1.2 million cubic yards suitable for landfill is contained in three segments of the 6-mile project reach (Figure 4, Appendix 2, Feasibility Report). While the suitable material could be used as landfill at either Long Wharf or East Shore Park, local interests prefer that this material be used to create oyster habitat and to cap silty materials placed at the CLIS site. The 1.2 million cubic yards (mcy) are not sufficient to serve all three purposes. The supplemental proposal would therefore use the suitable materials to replace or mitigate some of the 137 acres of managed oyster beds destroyed by the proposed project (this revises the figure presented in the Feasibility Report which was 67 acres) and to cap silty materials at the CLIS site.

New oyster habitat can be created at two large manmade holes in New Haven Harbor. One hole is off Prospect Beach, and the other is in Morris Cove. The oyster industry strongly feels that dredged material should not be transported over the oyster beds that thrive between the ship channel and the hole off Prospect Beach. Their concern is that additional habitat there is not worth the risk to these existing healthy oysters. At this time the selected plan calls for filling only the hole in Morris Cove, which would create about 35 acres of new oyster habitat. Available oyster shell would be placed across the top of the fill to provide optimum substrate.

Including the 1.2 mcy considered suitable for landfill, materials that would be dredged as proposed in the Selected Plan total 4.4 mcy. The Morris Cove hole will accept approximately 900,000 cubic yards. It will be filled with suitable unconsolidated materials and available rock. The unsuitable material (3.2 mcy) would be disposed of at the CLIS site. The rest of the suitable material (300,000 cy) would be used to cap the CLIS site.

The cost of taking proposed dredged material to the CLIS site is estimated to be competitive with placing it in the Morris Cove holes--$3.50 per cubic yard. Although the hole is closer than the openwater LIS site to the project, a siltation curtain would appear to be needed around the hole's perimeter to confine the material, bottom dumped from scows.

Project Features Which Mitigate Impacts

The project includes environmental planning features to minimize short-term project impacts. Those features are as follows. Parenthetical references are to location within the Feasibility Report.

1. No dredging will take place from June through September. This is the critical period in the reproductive cycle of the oyster (p. 69).

2. Blasting will be reduced to a minimum or totally restricted from mid-January to mid-March to reduce impact on the spawning winter flounder. (Response to Dept. Commerce comment - p. B-17; item 10.)

3. Dredging and disposal activities will be monitored to ensure environmental protection. The Corps would be ready to take appropriate action should it be required. (Response to Long Island Oyster Farms - p. B-67; items 3 and 5.)

Costs

The estimated first cost of the selected plan based on January 1981 prices is summarized by features in the following Table 1. An allowance of 15 percent for contingencies is included. All estimates include engineering and design, and supervision and administration amounting to about 8 percent based on the cost of work for similar projects. Costs associated with possible modifications of two existing harbor sewer outfall lines due to project enlargement as proposed are minimal.

TABLE 1

Summary of Estimated Costs
(Selected Plan - 40-Foot Depth)

	Quantity (000 cy)	Cost ($000)
Dredging-Disposal of Unconsolidated Material		
. Main Channel - LIS to Sta. 72+00	3,750	16,301
. Head of Navigation - 500' wide channel Sta. 72+00 to Sta. 14+00	258	1,121
. Common Turning Basin - Sta. 51+50 to 38+50 (Vol. East and West of Channel)	200	869
. Interior Access Channels - Sta. 56+00 to 22+00	50	217
. Enlarging Private Berths - Sta. 56+00 to 22+00	118	512
SUBTOTAL	4,400	19,220
Dredging-Disposal of Rock-Main Channel	27.2	1,994
Timber Pile Dolphin		200
TOTAL ESTIMATED FIRST COST		21,214

The estimated implementation costs based on January 1981 price levels concerning cost sharing on the selected plan are as follows:

	Conventional Cost Sharing ($)	President Carter's Proposed Cost Sharing ($)
Federal	20,285,000	19,224,000
Non-Federal		
State of Connecticut	-	1,061,000
Interior Access Channels	217,000	217,000
Berths	512,000	512,000
Timber Pile Dolphin	200,000	200,000
TOTAL ESTIMATED FIRST COST	21,214,000	21,214,000

Estimates of average annual charges for the total project investment including annual maintenance costs are shown in Table 2. An interest rate of 7 3/8% and an amortization period of 50 years or a factor of 0.07591 has been used for computing annual charges on project investment.

TABLE 2

Annual Charges

Estimated First Cost	$21,214,000
Interest During Construction	3,129,000
TOTAL ESTIMATED PROJECT INVESTMENT	$24,343,000

Interest and Amortization (7 3/8%, 50 yrs.)	$1,848,000
Annual Maintenance	307,000
TOTAL ANNUAL COST	$2,155,000

Benefits

Benefits to be derived from the proposed New Haven Harbor modifications consist chiefly of transportation savings. The savings to shippers are in the form of increased efficiency and reduced operating costs from the use of larger ocean-going vessels over an economic project life of 50 years. Social well-being and regional development benefits have not been quantified.

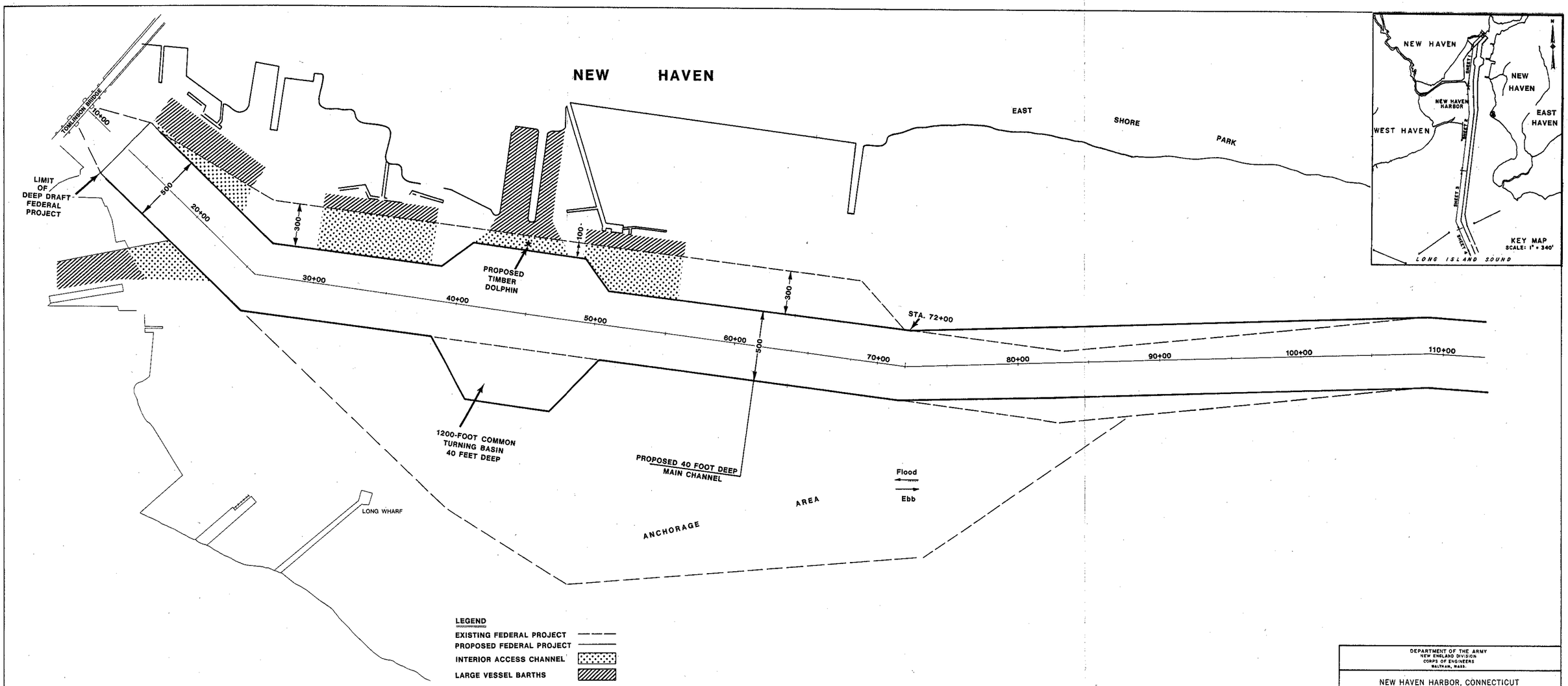
The transportation cost of importing petroleum products in vessels using New Haven Harbor are estimated based on: (1) continued use of the existing 35-foot Federal deep draft project, and (2) expected use with the "selected plan." Savings are the difference between costs for commerce movements over the 35-foot channel and the 40-foot channel depth being considered. On this basis, transportation benefits have been estimated and total $5,339,000 annually. Navigation improvements as proposed are economically justified. Findings are presented in Table 3 below.

TABLE 3

Summary of Economic Analysis of Selected Plan

Item	Amount
Average Annual Benefits*	$5,336,000
Annual Costs	$2,155,000
Benefit-Cost Ratio	2.48

*The project would result in a net loss of 102 acres of leased oyster land. At an average competitive bid of $30 per acre the annual cost of eliminating 102 acres would be approximately $3,000. This amount ($3,000) is subtracted from the annual transportation benefits of $5,339,000 to obtain the annual project benefit figure of $5,336,000.



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASS.

NEW HAVEN HARBOR, CONNECTICUT
SUPPLEMENT REPORT

REVISED SHIPCHANNEL AND TURNING BASIN

SHEET 1OF 1 OCTOBER 1981

PLATE 2

OTHER RELATED INFORMATION

Engineering Investigations

Design - The design vessel characteristics for the 40-foot project, found to be the optimum NED plan, were based on the following assumptions:

- Larger vessels use on the average 3 foot of tide
- Vessels need 4 feet of clearance under keel to safely transit waterway (includes an allowance for squat and trim)
- Vessels lightload 3 feet max.

Calculation

40 foot channel
+ 3 tide
43 feet
- 4 clearance
39 foot operating draft
+ 3 foot lightload
42 foot design draft

The design vessel characteristics for the 40-foot proposed project depth are presented in the following table:

TABLE 4

Channel Depth	Design Vessel Characteristics (1981 U.S. Flag Tanker)			Design Vessel
	Loaded Draft	Beam	Length	DWT
40 ft. (Plan A)	42	110	780	62,000

Wave Allowance - The statement contained in Appendix 3, page 3-9, paragraph "f" that vessels in the channel and turning basin encounter waves of up to 4 feet in height, 50 feet in length, and a 10-second period is in error. Reevaluation of the wave climate in New Haven Harbor and vicinity revealed that it is nearly impossible to develop the necessary wind, fetch and duration characteristics to support the wave climate mentioned above. However, findings indicate that waves up to 4 feet in height, 128 feet in length and a 5-second period do, on occasion, occur in the area. These wave characteristics have little effect on large ocean-groin vessels. Furthermore, harbor vessel users report that when severe storm conditions prevail in the area, a rare happening, ships will remain at sea or at berth and not attempt to navigate the channel. Thus, allowance for vessel pitch, roll and heave due to wave forces are considered unnecessary.

Proposed Studies - As a result of a meeting with Connecticut Department of Agriculture, Aquaculture Division, oyster industry representatives, Connecticut Coastal Area Management and the National Marine Fisheries Service on 26 August 1981, it was determined that there are two major concerns of the oyster industry in New Haven Harbor. One is the potential effect that channel widening at the Southwest Ledge could have on the wave climate across the oyster grounds within the breakwaters. The industry contends that wave scouring and deposition could occur with southeasterly storms, ruining these lots as viable oyster beds. As a result, we are including as part of project advanced engineering and design, a study of the harbor wave climate with and without the improvement including the bend of the channel at the outer harbor, at an estimated cost of $50,000.

The second concern is over the potential for changes in current patterns due to proposed channel widening and deepening. Changes in current patterns could have marked impacts on the viability of the oyster beds. Should they change in such a manner as to transport the oyster larvae out of the harbor prior to their set, the industry would suffer losses. The concern is based on the industry's considered opinion that the losses suffered at Bridgeport Harbor, CT were caused by the 1963 improvement dredging. We will address this concern by developing baseline data on existing current patterns, followed by a study to determine the probable effect of the widened and deepened channel, at an estimated cost of $100,000. Appropriate mitigative action would follow if the studies so indicated.

Economics

The benefit analysis has been updated using January 1981 WRSC vessel operating cost data as displayed in Table 5. Revised fleet projections (1985-2035) by vessel draft have been developed. These projections as shown in Table 6 are based on analysis of the current fleet mix, disucssion with New Haven shipping interests, and observation of U.S. and world fleet projections. A typical example of the computation of average unit transportation costs is exhibited in Table 7. Annual transportation costs and savings for various channel depths are shown in Table 8. Deep draft transportation benefits are presented in Table 9. Benefit-cost ratios and net benefits are provided in Table 10. The 40-foot plan maximizes net benefits as was the case in the Feasibility Report and continues as the NED plan.

TABLE 5

Vessel Hourly Operating Costs*

Vessel Size DWT	Foreign Flag At Sea($)	Foreign Flag In Port($)	US Flag At Sea($)	US Flag In Port($)
25,000	1,260	830	1,900	1,540
35,000	1,110	830	2,060	1,700
50,000	1,480	990	2,410	1,960
60,000	1,550	1,060	2,680	2,090
70,000	1,700	1,060	2,810	2,170
80,000	1,800	1,110	2,930	2,240
90,000	1,900	1,160	3,070	2,340
120,000	2,090	1,320	3,430	2,660

*derived from January 1981 WRSC data

TABLE 6

Projected Size Distribution of Tanker Fleet Transporting Petroleum Products to New Haven (1985)

Vessel Draft (ft.)	Percentage of Tonnage for Selected Channel Depths 35 ft	38 ft	40 ft	41 ft	42 ft	45 ft
30	4	3	2	2	2	2
31	15	12	9	9	9	9
32	18	14	10	10	10	10
33	15	12	8	8	8	8
34	22	22	18	18	18	18
35	12*	13	10	10	10	10
36	7**	8	9	9	9	9
37	7***	8	10	10	10	10
38		2*	3	3	3	3
39		3**	6	6	6	6
40		3***	6*	6	6	6
41			5**	5*	5	5
42			4***	4**	4*	4
43				***	**	*
44					***	**

*lightloaded 1 ft.
**lightloaded 2 ft.
***lightloaded 3 ft.

TABLE 6
(cont.)

Projected Size Distribution of Tanker Fleet Transporting Petroleum Products to New Haven (1995-2035)

Vessel Draft (ft.)	Percentage of Tonnage for Selected Channel Depths					
	35 ft	38 ft	40 ft	41 ft	42 ft	45 ft
30	4	3	2	2	2	2
31	15	12	9	9	9	9
32	18	14	10	10	10	9
33	15	12	9	7	6	5
34	22	22	18	17	16	15
35	12*	13	10	9	8	7
36	7**	8	9	9	8	7
37	7***	8	10	11	11	11
38		2*	3	4	5	6
39		3**	6	6	7	8
40		3***	6*	6	7	8
41			5**	5*	5	6
42			4***	4**	4*	4
43				1***	2**	2*
44					***	1**

*lightloaded 1 ft.
**lightloaded 2 ft.
*** lightloaded 3 ft.

TABLE 7

Computation of Average Unit Transportation Costs

Example: 35 ft vs 40 ft

35-Foot Channel

Draft (ft.)	Cost ($/Ton)	% of Tonnage
30	19.00	4
31	17.60	15
32	16.18	18
33	14.70	15
34	13.30	22
35	12.49	12
36	12.70	7
37	12.90	7
	Av. Unit Cost	$14.73

40-Foot Channel

Draft (ft.)	Cost ($/Ton)	% of Tonnage
30	19.00	2
31	17.60	9
32	16.16	10
33	14.70	8
34	13.30	18
35	11.91	10
36	11.60	9
37	11.30	10
38	11.00	3
39	10.70	6
40	10.80	6
41	10.17	5
42	10.00	4
	Av. Unit Cost	$13.04

TABLE 8

Annual Transportation Costs and Savings - (7 3/8%)

	35 ft	38 ft	40 ft	41 ft	42 ft	45 ft
1985 - 5,270,000 tons						
$/Ton	14.73	13.94	13.04	13.04	13.04	13.04
Unit Savings ($)	-	.79	1.69	1.69	1.69	1.69
Total Cost ($000)	77,627	73,464	68,721	68,721	68,721	68,721
Total Savings ($000)	-	4,163	8,906	8,906	8,906	8,906
1990 - 4,975,000 tons						
$/Ton	14.73	13.94	13.04	12.975	12.905	12.805
Unit Savings ($)	-	.79	1.69	1.74	1.83	1.93
Total Cost ($000)	73,282	69,874	64,551	64,551	64,202	63,705
Total Savings ($000)	-	3,930	8,408	8,731	9,080	9,577
1995-2035 - 4,469,000 tons						
$/Ton	14.73	13.94	13.04	12.91	12.77	12.57
Unit Savings ($)	-	.79	1.69	1.82	1.96	2.16
Total Cost ($000)	65,828	62,298	58,276	57,695	57,069	56,175
Total Savings ($000)	-	3,531	7,552	8,134	8,759	9,653

TABLE 9

New Haven Transportation Benefits * ($000)

Channel Depth	1985	1990	1995-2035	7 3/8% Average Annual Equivalent
35'	-	-		-
38'	2,768	2,613	2,348	2,496
40'	5,922	5,591	5,022	5,339
41'	5,922	5,806	5,409	5,612
42'	5,922	6,038	5,824	5,906
45'	5,922	6,369	6,419	6,338

*domestic benefits halved

TABLE 10

New Haven Benefit-Cost Ratios and Net Benefits

Channel Depth	Annual Benefits ($000)	Annual Costs ($000)	BCR	Net Benefits ($000)
35 ft.	-			
38 ft.	2,496-3*=2,493	1,384	1.80	1,109
40 ft.	5,339-3*=5,336	2,155	2.48	3,181
41 ft.	5,612-3*=5,619	2,494	2.25	3,125
42 ft.	5,906-3*=5,903	2,910	2.03	2,993
45 ft.	6,338-3*=6,335	4,425	1.43	1,910

*loss of leased oyster land

Impacts

Ocean Dumping (Section 103 Criteria - As a result of recent amendments to Section 103, P.L. 92-532, the Marine Protection, Research, and Sanctuaries Act of 1972, dredged disposal criteria in Long Island Sound have been modified. Until 22 December 1980, disposal activities within the Sound were under the purview of Section 404. In accordance with the amendments, disposal in excess of 25,000 cubic yards would have to be in compliance with Ocean Dumping (Sec. 103) criteria.

A letter of guidance concerning compliance of the project with the Section 103 criteria was received from EPA, Region 1, on 28 August 1981. It stated that EPA would require no further biological testing so long as the Corps used a disposal management strategy which would cover the less desirable material from the inner harbor with that from the outer harbor. This is already part of the project plan. Also, it indicated that no alternative openwater disposal site in Long Island Sound other than the CLIS site is worthy of consideration for this project.

Local Cooperation

Connecticut Governor Ella Grasso's 12 February 1980 letter is considered sufficient in scope and commitment to serve as the basis for local project sponsorship. Accordingly, the above statement supersedes page 56, paragraph "c" of the Feasibility Report.

House Public Works Committee Resolution, 14 December 1950

In compliance with U.S. House resolution adopted 14 December 1950 as concerns the advisability of providing recreational boating improvements in New Haven Harbor, findings indicated present facilities are adequate and that local interests have no serious small boat development plans. During the summer of 1971, the city of New Haven unveiled an impressive Long Wharf waterfront proposal. It featured a 61-acre manmade island connected by an access bridge to shore. The plan included a 750-boat marina. The scope of Federal work would have involved an access channel and turning basin, which was found to be within the Corps small boat Section 107 authority. The marina was slated to be developed through a major landfill operation on the area's tidal mudflats to the immediate west of the Long Wharf itself. However, the city of New Haven was unable to find a developer interested in constructing the proposed project, and the city is not interested in pursuing small boat harbor improvements at this time. Therefore, no further consideration has been given to recreational boating improvements.

STATE OF CONNECTICUT

DEPARTMENT OF ENVIRONMENTAL PROTECTION

COASTAL AREA MANAGEMENT PROGRAM

August 7, 1981

Colonel C.E. Edgar III
Division Engineer
Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Massachusetts 02254

RE: Federal Consistency Determination - New Haven Harbor Improvement Dredging

Dear Colonel Edgar:

In a letter dated June 26, 1981, we informed you that based on the information available to us at that time, we were unable to concur with your determination of consistency for improvement dredging at New Haven Harbor. In response to our letter we were sent a copy of the April 1981 draft of the Feasibility Report for Improvements to the Federal Navigation Project at New Haven Harbor. Subsequently, on July 28, 1981, we met with Don Martin, Ray Boyd and Bud Barrett of your office. During our meeting they presented a revised proposal for the navigation channel different from the configuration proposed in the April 1981 draft Feasibility Report. This letter is meant to address the consistency of the newest improvement proposal and the mitigation of potential adverse impacts to coastal resources resulting from the navigation project improvements.

Program policies discourage the dredging of new federally maintained navigation channels, basins and anchorages while encouraging the maintenance and enhancement of existing federally maintained navigation channels, basins and anchorages. The newest proposal for authorization involves dredging a common turning basin in a portion of the existing anchorage and turning basin, where benthic habitat has already been disrupted by previous authorized dredging. Therefore, the new configuration in the inner Harbor can be considered consistent with Program policies. However, it should be noted that in order to accrue maximum benefits from the proposed federal project improvements, all the terminals adjacent to the project would have to deepen their berths and, in many cases, dredge connecting channels to the project at the federally authorized depth. Those private improvements are subject to approval by both the Corps of Engineers and the Connecticut Department of Environmental Protection.

As you know, the dredging and disposal activities will require a Section 401 Water Quality Certification. Aside from the restrictions during shellfish spawning season, there may also be conditions restricting the times when blasting can occur. Winter flounder and lobster congregate in the Harbor in winter months. Therefore it is advisable that during project design, the Corps consult with the members of

Phone: (203) 566-7404
71 Capitol Avenue • Hartford, Connecticut 06115

the Dredging Management Committe to determine a feasible blasting schedule.

The proposed channel widening and entrance channel extension will eliminate portions of leased shellfish beds, an action not consistent with Connecticut Coastal Management Program policies. However, the proposed project does provide an opportunity to create shellfish habitat elsewhere in New Haven Harbor by using dredged material to create substrate suitable for oyster seeding. By disposing of suitable dredged material into borrow pits at two places in the Harbor (see attached maps), it would appear that the Corps can establish suitable benthic habitat in areas not presently leased by oyster fishermen, thereby mitigating this potential inconsistency.

In conclusion, the Planning Coordination/Coastal Management Unit of the Department of Environmental Protection can concur with your consistency determination for the channel improvements in the new configuration if the following conditions are met:

1. A plan to dispose of suitable dredged material into borrow pits in the New Haven Harbor is developed in conjunction with the Connecticut Department of Agriculture, Aquaculture Division. The objective of the plan should be to create benthic habitat suitable for development as shellfish beds. The plan must be incorporated in project design and accounted for in the project budget. Please contact Mr. John Baker, Chief of Aquaculture Division (203) 874-0696, to coordinate the planning and implementation.

2. A program for monitoring the dredging and disposal operations is developed by the Dredging Management Committee and sponsored by the Corps of Engineers in accordance with the provisions of the Interim Plan for the Disposal of Dredged Material from Long Island Sound.

Apart from the issue of consistency, we would like to express concern about the project costs and benefits in general. Oystermen who clear or abandon the affected leased beds before the improvement dredging begins may sustain a loss of their investment in seeding these beds. Establishing productive beds in Morris Cove and off Prospect Beach may take several years and further seeding investment, even though eventual benefits are to be gained. As for the channel deepening, full benefits from the public expenditure may be limited unless all the private terminal operators have need to deepen their berths beyond the existing 35 foot channel depth. According to the Feasibility Report correspondence, only one terminal operator has provided written assurance that the private company is willing to deepen its berth. We can only assume that channel improvements would allow deeper draft vessels to enter the Harbor; we do not know how many of the other terminal operators anticipate receiving them and utilizing the proposed authorized depth. Generally speaking, we recognize that it would be beneficial to eliminate hazardous rock bottom and bends in the existing channel while providing an adequate channel for future traffic. However, this is a very large project with a large commitment of public funds. We trust fair consideration will be given to all these issues when decisionmaking occurs.

Should you have any questions about this letter, please contact me. Thank you for sending us the needed information. We look forward to continued cooperation

on this project.

Sincerely,

Arthur J. Rocque, Jr.
Director

AJR/CSM/11

Enclosures
cc: John M. McCann, Jr.
John E. Baker
Ben Warner
Robert Moore

THE GREATER NEW HAVEN CHAMBER OF COMMERCE
195 Church Street
New Haven, Connecticut 06506
(203) 787-6735

Army Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts, 02254
Attn: Mr. Raymond Boyd

September 1, 1981
Re: Main Channel Dredging
New Haven, Connecticut

Gentlemen,

At it's regular meeting on August 31, 1981, the Port Development Council of this Chamber of Commerce recieved an update of detail of proposed dredging of the main channel and turning basin by Captain Donald Monks chief harbor pilot. He presented the alternatives and final "agreed" detail, that his pilot association endorses, as he discussed with you a week or so ago.

Our Port Development Council endorses the revised plan as presented by Capt. Monks. Also present and members of the Council were representatives of Wyatt Co. and of New Haven Terminal, who also endorse the plan. You will be hearing from them separately.

Sincerely,

Richard C. Maconi
Chairman, Port Development Council

RECOMMENDATION

I recommend that the existing navigation project in New Haven Harbor, authorized by the River and Harbor Act approved 24 July 1946, House Document 517, 79th Congress, 2nd Session, be modified in accordance with the selected plan described in this supplement report and shown on Plate 1, with such improvements as in the discretion of the Chief of Engineers may be advisable at a total project first cost currently estimated at $21,214,000.

It is recommended that the construction authorization for the New Haven Harbor selected plan be in accordance with the President's proposed cost-sharing policy. This recommendation is made with the provision that, prior to implementation of the project, State and local interests will, in addition to the general requirements of law for this type of project, agree to comply with the following requirements:

a. The State of Connecticut provide a cash contribution equal to 5 percent of the total first cost of the project;

b. Local interests will:

(1) Provide without cost to the United States all lands, easements, and rights-of-way necessary for implementation and later maintenance of the project, for aids to navigation, and for mitigation, upon the request of the Chief of Engineers, including suitable areas determined by the Chief of Engineers to be required in the general public interest for initial and later disposal of dredged material, and including necessary retaining dikes, bulkheads, and embankments therefor, of the costs of such retaining works;

(2) Hold and save the United States free from damages due to implementation and maintenance of the project, not including damages due to fault or negligence of the United States or its contractors;

(3) Provide and maintain without cost to the United States adequate public terminal and transfer facilities open to all on equal terms;

(4) Provide and maintain without cost to the United States adequate depths in berthing areas and local access channels serving the terminals;

(5) Accomplish without cost to the United States all alterations and relocations of transportation facilities, storm drains, sewer outfalls, utilities, and other structures and improvements made necessary by the project; and

(6) Prohibit the erection of any structures within a distance to be determined by the Chief of Engineers from the bottom edge of the proposed channel and turning basin.

2 Incl
as

WILLIAM E. HODGSON, JR.
Colonel, Corps of Engineers
Acting Division Engineer

ADDENDUM TO FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE FEASIBILITY REPORT ON COASTAL DEVELOPMENT FOR NAVIGATION

NEW HAVEN HARBOR, CONNECTICUT

OCTOBER 1981

ADDENDUM

Addendum to Final Environmental Impact Statement for the Feasibility Report on Coastal Development for Navigation, New Haven Harbor, Connecticut

October 1981

Abstract: The reporting officer (New England Division Engineer) adopted a modified plan calling for dredging to a 40-foot depth, rather than the 41 feet originally called for; a 1,200-foot wide (irregular octagon) common turning basin; and realignment of the ship channel to eliminate a bend located about 1,000 feet south of the existing turning basin; also as a project feature, a plan for mitigation of oyster habitat losses involving disposal of suitable dredged materials into a borrow pit in the harbor, to provide substitute oyster substrate. No significant additional impacts are anticipated as a result of these modifications to the Feasibility Report's selected plan. Additional information is provided describing mitigation measures already incorporated into the project plans to minimize short-term impacts; discussing model studies to take place, which will address oyster industry concern over potential effects of the project on wave and current regimes; discussing rationale for the plan for mitigation of oyster habitat destruction; and indicating compliance of the modified plan with Federal Regulations controlling disposal of dredged materials, including recent amendments thereto.

ADDENDUM

Addendum to Final Environmental Impact Statement concerning environmental consequences of proposed modifications to the plan selected in the April 1981 Feasibility Report on Coastal Development for Navigation, New Haven Harbor, Connecticut.

1. Principal Preparer: The following person was primarily responsible for preparing this addendum to the Final EIS.

Name: Dr. Joseph L. Horowitz

Expertise: Environmental impact analysis, ecology, physical science.

Experience: Hydrologist; Remote Sensing Researcher - U.S. Army Corps of Engineers, 4 years.

Supervisor, Remote Sensing Applications - Environmental Research & Technology, Inc., 1½ years.

EIS Manager - U.S. Army Corps of Engineers, 4 years.

Professional Discipline: Environmental Resource Specialist

2. Rationale for Recommended Changes to the Proposed Plan

The reporting officer's (New England Division Engineer) selected 41-foot plan was reconsidered and found unwarranted on the basis of EQ alone. A review of project economics found that the 40-foot depth remains the NED plan and this has become the Selected Plan (Modified NED-EQ Oriented). A common turning basin for all large vessels would form an integral part of the proposed 500-foot wide ship channel. The existing 5,800 foot by 800 foot turning basin is considered inefficient as it attempts to provide access to each and every berth facility. Realignment of the ship channel to eliminate the bend located about 1,000 feet south of the entrance to the existing turning basin would remove a hazard to navigation. Included as a project feature is the use of suitable dredged materials to replace or mitigate some of the 137 acres of managed oyster beds destroyed by the proposed project. This would be accomplished by placement of about 900,000 cubic yards of suitable materials into a borrow pit in the harbor at Morris Cove to provide 35 acres of substitute oyster substrate. Findings indicate the opportunity to make use of dredged materials in this way is cost-competitive with disposal of these materials at the Central Long Island Sound (CLIS) openwater site.

3. Environmental Consequences of the Recommended Changes

No significant additional impacts to the environment would be anticipated as a result of the Modified NED-EQ Oriented Selected Plan.

4. Other Related Information

A. Project Features Which Mitigate Impacts

In addition to mitigation for destruction of oyster habitat by the channel dredging, the following features have been incorporated into the project plans to minimize short-term impacts. Parenthetical references are to location within the Final Feasibility Report and EIS.

1. No dredging will take place from June through September. This is the critical period in the reproductive cycle of the oyster (p. 69).

2. Blasting will be reduced to a minimum or totally restricted from mid-January to mid-March to reduce impact on the spawning winter flounder. (Response to Dept. of Commerce comment - p. B-17; item 10.)

3. Dredging and disposal activities will be monitored to ensure environmental protection. The Corps would be ready to take appropriate action should it be required. (Response to Long Island Oyster Farms - p. B-67; items 3 and 5.)

B. Proposed Studies

As a result of a meeting with Connecticut Department of Agriculture, Aquaculture Division, oyster industry representatives, Connecticut Coastal Area Management and the National Marine Fisheries Service on 26 August 1981, it was determined that there are two major concerns of the oyster industry in New Haven Harbor. One is the potential effect that channel widening at the Southwest Ledge could have on the wave climate across the oyster grounds within the breakwaters. The industry contends that wave scouring and deposition could occur with southeasterly storms, ruining these lots as viable oyster beds. As a result, we are including as part of project advanced engineering and design, a study of the harbor wave climate with and without the improvements including the bend of the channel at the outer harbor, at an estimated cost of $50,000.

The second concern is over the potential for changes in current patterns due to proposed channel widening and deepening. Changes in current patterns could have marked impacts on the viability of the oyster beds. Should they change in such a manner as to transport the oyster larvae out of the harbor prior to their set, the industry would suffer losses. The concern is based on the industry's considered opinion that the losses suffered at Bridgeport Harbor, CT were caused by the 1963 improvement dredging. We will address this concern by developing baseline data on existing current patterns, followed by a study to determine the probable effect of the widened and deepened channel, at an estimated cost of $100,000. Appropriate mitigative action would follow if the studies so indicated. Among these could be the issuing of compensatory leases by the State at locations elsewhere in the harbor, including newly created habitat developed as a result of the same forces adversely affecting the existing lots.

C. Rationale for Plan for Mitigation of Oyster Habitat Destruction

The Corps had developed a plan of mitigation for most (110 acres) of the oyster ground to be physically destroyed by development of the improved channel. This involved the disposal of dredged material into two borrow pits in the harbor to provide substitute substrate. Morris Cove and Prospect Beach locations were considered as potential sites. The industry, at the 26 August meeting, rejected the Prospect Beach site due to concern over the transport of dredged materials across existing managed oyster grounds. The Morris Cove site, because of its proximity to the channel, is free of this problem. Although it provides only 35 acres of new substrate, the industry did not consider acre for acre replacement a significant difficulty, being far more concerned with the wave and current questions described in B., above.

D. Ocean Dumping (Section 103) Criteria

As a result of recent amendments to Section 103, P.L. 92-532, the Marine Protection, Research, and Sanctuaries Act of 1972, dredged disposal criteria in Long Island Sound have been modified. Until 22 December 1980, disposal activities within the Sound were under the purview of Section 404. In accordance with the amendments, disposal in excess of 25,000 cubic yards would have to be in compliance with Ocean Dumping (Sec. 103) criteria.

A letter of guidance concerning compliance of the project with the Section 103 criteria was received from EPA, Region 1, on 28 August 1981, and is attached. It states that EPA would require no further biological testing so long as the Corps used a disposal management strategy which would cover the less desirable material from the inner harbor with that from the outer harbor. This is already part of the project plan. Also, it indicates that no alternative openwater disposal site in Long Island Sound other than the CLIS site is worthy of consideration for this project.

E. Redesignation of Disposal Area to include Morris Cove

Diverting 900,000 cubic yards of suitable dredged materials (medium to fine sand and rock, mostly from the project's outer reach) to the Morris Cove borrow pit for oyster habitat development requires redesignation of the disposal area to include this site. A telephone conversation with EPA, Region 1, on 3 September 1981 indicated that EPA would have not problem with this modified disposal plan. A confirming letter from EPA was received on 29 September 1981 and is attached.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

August 28, 1981

Joseph L. Ignazio, Chief
Planning Division
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Re: NEDPL-I

Dear Mr. Ignazio:

We have reviewed the Preliminary Draft Copy of the "Final Feasibility Report and Environmental Impact Statement on Coastal Development for Navigation, New Haven Harbor, Connecticut," dated April 1981.

You requested, in a letter dated August 12, 1981, a statement of EPA's position concerning overall compliance with current Ocean Dumping (Section 103) Criteria, for New Haven Harbor, including the need, or lack thereof, for bioaccumulation testing.

Because the Mill River and Quinnipiac River Project is a northerly extension of the New Haven Harbor Channel Improvement Project, EPA strongly recommends that the two projects be considered as one large integrated dredge spoil disposal management project. The advantages of combining the two projects are: (1) the integration of the bioaccumulation test data requirements for both projects and (2) the selective use of clean New Haven Harbor spoils to cap the more contaminated Harbor Project spoils and the Mill River and Quinnipiac River Project spoils.

Comparison of the bulk sediment analyses provided for both projects shows that the sediments are most heavily contaminated in the Mill River with the Quinnipiac River somewhat less contaminated. The Harbor Improvement Project sediments vary from moderately contaminated at the juncture with the Quinnipiac River Project to relatively clean sediment on the lower segments of the Harbor Project.

Bioaccumulation testing has been provided for the proposed maintenance dredging of 150,000 cubic yards of sandy silt from the Mill River and Quinnipiac Project. The results of bioaccumulation testing for the Mill and Quinnipiac Rivers indicate that Polychlorinated Biphenyls (PCB's) and Petroleum Hydrocarbons

(PHC) accumulated in tissues of test organisms to statistically significant amounts as compared to tissues of reference organisms. This accumulation of PCB's and PHC's was greater in test organisms exposed to sediments from the Mill River, than those exposed to sediments from the Quinnipiac River.

It is, therefore reasonable to determine that additional bioaccumulation testing of sediments from the Harbor Project is not necessary because the contamination level of the Harbor Project sediments are equal to or less than those of the Mill River and Quinnipiac River Project. This determination for no additional testing is further justified if the cleaner harbor sediments are used to cap the more contaminated sediments, thus isolating the polluted material from biological availability, thereby reducing the potential biological accumulation of these Xenobiotic constitutents of concern at the proposed Central Long Island Sound Disposal Site.

EPA strongly suggests the following disposal management program:

-- Dredge in the Mill River, then the Quinnipiac River and then proceed from the upper reaches of the improvement project, toward the outer harbor. Since a large portion of the improvement project work will be new, much of the material (any non-recent sediments) will be clean, and can be used as a cap for the more polluted sediments from the Mill and Quinnipiac Rivers and the turning basin area.

-- The disposal management program must also consider private dredging applications which are forthcoming as a result of the improvement and maintenance dredgings. Some of this private dredging will require capped disposal at the Central Long Island Disposal Site.

-- A portion of this program was considered in your report which reads on page 69, Item 1.06, "The channel will be dredged from the inside of the harbor outward, so that the innermost silty harbor sediments can be covered at the disposal site by the sandy outer harbor sediments, thus reducing surface roughness (and therefore erodability) of the disposal pile."

-- The report does not indicate whether the dredging of the Mill and Quinnipiac Rivers can be timed to allow capping with cleaner sediments from the outer harbor.

As a result of conversations with Joe Horowitz of your staff, we were also asked to provide you with a statement regarding the need - or lack thereof, to investigate other alternative open water disposal sites.

It is reasonable, in our opinion that alternative open water disposal sites not need to be investigated since geographically, the Central Long Island Sound disposal site is the open water dredged material disposal site closest to New Haven.

We have no objections to the selection of this site for disposal, provided however, that an effective capping program (disposal management program) is utilized.

Sincerely yours,

Allen J. Ikalainen
Chief, Special Permits Section

cc: USF&WS, Concord, NH
NMFS, Gloucester, MA
Karen Hayward, CT DEP
V.L. Andreliunas, COE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

September 29, 1981

Joseph L. Ignazio, Chief
Planning Division
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Re: New Haven Harbor, Connecticut
Coastal Development for Navigation

Dear Mr. Ignazio:

Your letter of 4 September 1981, requested EPA's position concerning your proposal to dispose of 900,000 cubic yards of medium to fine sand and rock into the Morris Cove borrow pit, in New Haven Harbor, for creation of oyster habitat.

We support this type of disposal plan; however, we do not want this proposal to adversely affect other proposals to use the Morris Cove borrow pit for dredged material disposal and oyster habitat creation which may occur prior to the improvement project.

Specifically, if it is determined that the Morris Cove borrow pit can contain the 150,000 cubic yards of material to be maintenance dredged from the Mill and Quinnipiac Rivers with a suitable layer of clean capping material, we would favor this being done. Further studies would be necessary to determine if capping of this type of silty material is possible, and a capping and monitoring plan would have to be developed.

We understand the ultimate desire is to create suitable oyster habitat at the borrow pit site by filling the hole to the surrounding elevations and by having a clean suitable substrate.

We further understand that if this was accomplished prior to the commencement of the improvement project, it would not affect the improvement project in any way. If the Morris Cove pit required further filling and the improvement project was underway, then suitable clean material could be used to create the final cap and bring this area up to the desired elevation.

Page 1 of 2

We reserve the right to review the Final Environmental Impact Statement and provide you with comments regarding the entire scope of the improvement project. Questions regarding this letter should be directed to Ed Reimer at 223-5061.

Sincerely,

Allen J. Dvalsinen
Chief, Special Permits Section

cc: USFWS, Concord, NH
NMFS, Gloucester, MA
USCGE, Carl Bouthillier, Chief, Navigation Branch
CT DEP, Tina Suarez-Murias, Planning Coordination/Coastal Development

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